

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 28 February 2008 has been entered.

Status of Claims

2. Responsive to the amendment filed 28 February 2008, claim 1 is amended.
Claims 1-10 are currently under examination.

Status of Previous Rejections

3. The rejections under 35 USC 112 are overcome by the amendment. New ground for rejection are presented below.

Claim Rejections - 35 USC § 103

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'502 in view of Kato.

Regarding claim 1, JP '502 teaches a method of making a highly heat conductive metal and carbon composite material (see abstract). JP '502 teaches wherein the carbon material can be carbon nanotubes (see paras. [0001]-[0010]). JP '502 teaches mixing the carbon material with the metal material in a powder state (see paras. [0011]-[0014]). JP'502 further teaches compressing the resultant mixed material to a sheet-shaped solid material by a hot press, thus forming a high temperature conductivity composite material (see paras. [0015]-[0016]).

JP '502 does not teach wherein the material is formed into granules such as chips, pellets, and the like, melting the metal in the granules and kneading the metal and the carbon nano materials to form a composite material and injecting the composite materials to form a composite metal product by using an injection machine, and obtaining the composite metal product. JP '502 does not teach any particular method of processing the material to form servicable parts.

Kato teaches a process of forming shaped parts of metals (see abstract). Kato teaches that an ingot is chipped to form a feedstock (see cols. 3-4). Kato teaches that the metal chips are melted and kneaded in a screw-type injection molding machine and injected into a mold to obtain a metal product (see cols. 4-6). Kato teaches that the process melt blends the metal chips from the ingot (see cols. 4-6).

It would have been obvious to one of ordinary skill in the art to process the high temperature conductivity composite material of JP '502 using the injection molding technique of Kato, in order to create parts with high dimensional and weight precisions and at a low cost, as taught by Kato (see col. 3).

Regarding the limitation of forming a composite material including a molten metal material, this feature would have been inherent in process of Kato when the ingot of JP '502 is used as a feedstock for chipping, because Kato teaches that the material is melt-blended (see abstract, cols. 4-6). Applicant is further directed to MPEP 2112.01.

Regarding claim 2, Kato teaches use of an inline screw injection molding machine (see cols. 3-6, figs. 1(A) and 1(B)).

Regarding claim 3, JP '502 teaches that the metal component is a low melting point metal, such as aluminum (see paras [0009], claims 1-3).

Regarding claim 4, Kato teaches to recover the injected metal object (see cols. 3-6). The composite metal product would be extracted from the mold, as taught by Kato.

Regarding claim 5, JP '502 and Kato are applied to the claim as stated above.

Regarding claims 6-8, Kato teaches to recover the injected metal object (see cols. 3-6). The composite metal product would be extracted from the mold, as taught by Kato.

Regarding claim 9, JP '502 teaches that the composite material formed in the process has a high thermal conductivity (see paras. [0001]-[0005], claims 1-5).

Regarding claim 10, JP '502 teaches that the composite material formed has a high thermal conductivity (see paras. [0001]-[0005], claims 1-5).

Response to Arguments

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER KESSLER whose telephone number is (571)272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

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